

Appl. No. 09/997,132  
Amdt. Dated June 16, 2005  
Reply to Office Action of March 16, 2005

**Amendments to the Claims:**

This listing will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (Currently amended): A disposable diaper comprising:

a liquid-pervious topsheet;

a liquid-impervious backsheet;

a liquid-absorbent core having a length, width and thickness and being covered with an absorbent and diffusive sheet and disposed between said topsheet and said backsheet;

said liquid-absorbent core being formed on a side facing said topsheet with at least one pair of grooves depressed in a direction from a side of said topsheet toward a side of said backsheet, said at least one pair of collinear grooves being aligned in a longitudinal direction of the diaper and being spaced apart from each other in the longitudinal direction, each of said at least one pair of grooves having a bottom and side walls both covered with said topsheet;

said liquid-absorbent core containing water-absorbent fibers and superabsorbent particles;

and

substantially all of said superabsorbent polymer particles contained within the liquid-absorbent core being localized in a single zone at a lower portion of the liquid-absorbent ~~core~~; core

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with said superabsorbent polymer particles being distributed so as to have a non-discontinuous density gradient in a thickness direction of the liquid-absorbent core which extends across an entire thickness of the single zone so that a majority of the superabsorbent particles are located within a lower half of the liquid-absorbent core; and

said single zone being substantially coextensive with the width of the liquid-absorbent core and along said bottoms of said at least one pair of grooves with a higher concentration of the superabsorbent polymer particles within a vicinity of the at least one pair of grooves.

Claim 2 (Previously presented): The disposable diaper according to Claim 1, wherein said superabsorbent polymer particles are joined integrally with the absorbent and diffusive sheet covering said liquid-absorbent core along said bottom and side walls of said at least one pair of grooves.

Claim 3 (Previously presented): The disposable diaper according to Claim 1, wherein said absorbent and diffusive sheet is joined to said topsheet along said bottoms and side walls of said at least one pair of grooves by means of an adhesive.

Claim 4 (Previously presented): The disposable diaper according to Claim 1, wherein some said water-absorbent fibers form a thin layer so that a density of the water-absorbent fibers in said thin layer is higher than a density of at least some of the remaining water-absorbent fibers around a depth

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of said liquid-absorbent core, said thin layer being in close contact with said absorbent and diffusive sheet.

**Claim 5 (Previously presented):** The disposable diaper according to Claim 1, wherein said water-absorbent fibers comprises fluff pulp fibers.

**Claim 6 (Previously presented):** The disposable diaper according to Claim 1, wherein a distribution density of said superabsorbent polymer particles gradually increases in a thickness direction of said liquid-absorbent core from said topsheet toward said backsheet.

**Claim 7 (Previously presented):** The disposable diaper according to Claim 1, wherein said disposable diaper has a front waist region, a rear waist region and a crotch region extending between these two waist regions and wherein said at least one pair of grooves in a longitudinal direction of said diaper.

**Claim 8 (Previously presented):** The disposable diaper according to Claim 7, wherein said at least one pair of grooves comprises at least two pairs of grooves and said crotch region is formed along transversely opposite side edge portions thereof with said at least two pairs of grooves, respectively, extending in said longitudinal direction in parallel to each other.

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**Claim 9 (Previously presented):** The disposable diaper according to Claim 8, wherein a distribution density of said superabsorbent polymer particles in said liquid-absorbent core is higher between said at least two pairs of grooves extending in parallel to each other than outside said at least two pairs of grooves.

**Claim 10 (Previously presented):** The disposable diaper according to Claim 1, wherein the liquid-absorbent core contains at least 20% by weight of thermoplastic synthetic fibers.

**Claim 11 (Previously presented):** The disposable diaper according to Claim 10, wherein the thermoplastic synthetic fibers have a melting point of  $100^{\circ}\text{C} \pm 20^{\circ}\text{C}$ .

**Claim 12 (Currently amended):** The disposable diaper according to Claim 1, wherein said at least one pair of collinear grooves are ~~substantially collinear with one another in the longitudinal direction~~ and spaced apart from each other in the longitudinal center of the diaper.